

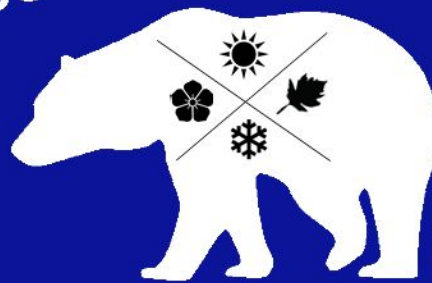


ADVANCING BEAR CARE

2019

A BEAR FOR ALL SEASONS

A Bear For All Seasons



ABC 2019



Edinburgh

WELCOME

Dear Bear Care Delegates,

The Bear Care Group, in collaboration with Five Sisters Zoo, is excited to welcome you to the 2019 Advancing Bear Care Conference in Livingston, Scotland! The Board has worked diligently to plan this event with an oft-discussed theme in mind that impacts all bear species: the impact of seasonality on metabolism, behavior and husbandry for the bears under our care. As always, the BCG strives to present the most progressive approaches to behavior-based husbandry, exhibit design and modification, veterinary care, enrichment, training, and provision of positive welfare. It is wonderful to see faces, both familiar and new, from all over the globe coming together to network and share their knowledge and experience for this conference. Over the next few days you will meet new friends while reconnecting with others, participate in thought-provoking lectures and interactive workshops, support bear care by shopping for amazing donated items at the silent auction, while experiencing the Five Sisters Zoo and the local culture and hospitality of Livingston,

Scotland. Throw yourselves into the action, join in the discussion, share your views and learn new techniques and perspectives on caring for our animals, while always considering “A Bear For All Seasons”.

Thank you for joining us, welcome to Scotland, and let’s make this the best Advancing Bear Care conference yet!

Jason (Jay) Pratte

President and Co-Founder, Bear Care Group

Behavioral Husbandry & Welfare Manager, Omaha’s Henry Doorly Zoo & Aquarium

“

WHO ARE YOU, AND WHAT CAN I DO FOR YOU?

Else Poulsen

”



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BEAR CARE GROUP MISSION STATEMENT



Bear Care GROUP

The Bear Care Group creates and enhances communication, cooperation and education among international bear care professionals by organizing bear care programs, publications and resources focused on advancing and sharing information on bear behaviour, husbandry, enrichment, training, veterinary care and other topics to further global bear welfare and conservation efforts.



Scotland



Ursus Americanus

Check out <https://www.bearcaregroup.org/> for post conference wrap up and photos. Continue networking with colleagues at bearcare@yahoogroups.ca. Find us on Facebook at www.facebook.com/groups/16630879979. You can support the Bear Care Group by using GoodSearch at [goodsearch.com](https://www.goodsearch.com) for all of your internet searches and Amazon Smile at [smile.amazon.com](https://www.amazon.com/smile) for your shopping needs. Visit our website for other ways to help out and join the Bear Care Group.



Ursus arctos horribilis

BEAR CARE GROUP BOARD OF DIRECTORS

Jason Pratte - President info@bearcaregroup.org

Mindy Babitz - Vice President/Treasurer mindy.babitz@bearcaregroup.org

Annemarie Weegenaar - Secretary annemarie.weegenaar@bearcaregroup.org

Heather Bacon - Director heather.bacon@ed.ac.uk

Angelika Langen - Director info@wildliveshelter.com

Angela Gibson - Director angela.gibson@bearcaregroup.org

FIVE SISTERS ZOO

MISSION STATEMENT

Our aim at the zoo is to raise public awareness and encourage conservation of endangered wildlife for both native and non-native species and create a safe and natural environment for all animals in our collection.

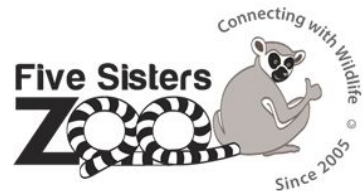


Carmen, Ursus arctos

FIVE SISTERS ZOO

In June 2011, Five Sisters Zoo became aware of the plight of three elderly ex-circus bears temporarily housed in an animal sanctuary in Belgium who would be destroyed if a permanent home wasn't found. The zoo raised £80,000 to construct a woodland enclosure and were able to welcome Suzy, Carmen, and Peggy to their forever home on the 29th of March, 2012. After more than twenty plus years in a traveling circus, these traumatised bears had to learn how to forage for food and how to interact with each other. They were fed seasonally appropriate diets which enabled them to hibernate for the first time in their lives. Enrichment programme included boomer balls, tires, a wooden jungle gym, and a wobble tree. Sadly, due to illness Peggy died in September 2017, approximately 33 years old, after six happy years at the zoo. In October 2016, the zoo also re-homed 4 ex-circus lions and in May 2018 were able to offer a home to two European Brown Bears, Henk and Eso, a brother and sister who were found practically starving to death in a small cage at a roadside restaurant in Albania. Like the three older bears, work started immediately on their rehabilitation and slowly they are learning to develop a trusting, positive relationship with their keepers. Five Sisters Zoo is now home to 175 different species.

Visit: fivesisterszoo.co.uk



THANK YOU

The Bear Care Group wishes to thank all of the wonderful volunteers and sponsors whose enthusiastic support has resulted in ABC 2019 Scotland. We are grateful to our guest speakers Doug Richardson and Suzanne Rogers. We wish to thank all of our presenters and moderators for sharing their expertise and experience. Thank you to all of the participants, those who have traveled from far and wide to join us, and those who live in Scotland. And finally, we especially wish to thank our partners; Brian, Shirley, and Gary Curran, Eileen Boyle, and the rest of the incredible Five Sisters Zoo staff for making this conference possible. We want to give special recognition to our wonderful sponsors for their tremendous support of our work at the Bear Care Group. Please take a moment to look at the back cover of this ABC 2019 Program and Proceedings for a colorful mosaic of their logos.

ANTHONY WYATT

ALBERT MANVILLE

ANONYMOUS

BEAR SCOTLAND

BEARVAULT

BRAMBLE FOODS

DELUXEBASE

GLENMORANGIE

GLOBAL ANIMAL WELFARE

HAUSER BEARS

MAKRO WHOLESALE

LIVINGSTON DESIGNER OUTLET

OTTO ENVIRONMENTAL

PETA

POLAR BEARS INTERNATIONAL

RAVENSDEN

TUNNOCK'S

VIVID ARTS

WALKERS SHORTBREAD



ELSE POULSEN MEMORIAL GRANT

In 2016 Hauser Bears, longtime partner of the Bear Care Group, developed the Else Poulsen Memorial Grant. This grant is intended to provide a deserving candidate with the opportunity to attend an Advancing Bear Care conference or workshop which may have otherwise been financially unreachable. This grant applies to all future Bear Care Group events, and the guidelines for the application process, as well as the parameters candidates must meet



for consideration, will be announced and published online prior to BCG professional development opportunities. The Bear Care Group is thankful to Hauser Bears for their commitment to supporting our mission, goals, conferences and workshops over the past several years, and we look forward to all future collaborations.

For the ABC 2019 Conference in Scotland we are pleased to support the attendance of two delegates, Ivanna Kudina and Thuong Ta Thi. Ivanna is the Bear Projects Manager at Eco-Halych: Wildlife Rehab, and is working to develop another large bear sanctuary in the Ukraine. Thuong Ta is the Assistant Animal Manager for Four Paws Viet. She is working to rehabilitate rescued Asiatic black bears at the Bear Sanctuary Ninh Binh.

The Else Poulsen Memorial Grant was developed in memory of the Bear Care Group's original founder and president, Else Poulsen. Her lifelong work, books, and dedication made her a hero to bears and caregivers alike, and this grant allows the Bear Care Group and its partners to continue her legacy.

ACCOMMODATION

Mercure Livingston Hotel

Almondview, Livingston

EH54 6QB

EDINBURGH

UNITED KINGDOM

Tel: (+44)1506551950 www.mercurelivingston.co.uk

The logo for the Mercure brand, featuring a large, stylized, light-colored 'M' in the background and the word 'Mercure' in a bold, dark purple serif font in the foreground.

The main hotel used by delegates is the Mercure hotel. There are several restaurants, pubs, and shops located within walking distance. Complimentary breakfast has been included in the room rate for ABC 2019 delegates and is served in the restaurant of the Mercure Hotel. Gratuity, however, has not been included. There is not an ATM within the hotel however an ATM is located at the ASDA store close by. See area map at end of program.

Registration will start in the hotel lobby on Wednesday, October 9th and run from 3:00 – 5:00 pm. It will then be moved to the Almond suite where the delegates can meet during the Ice Breaker 6:00 – 9:00 pm.

All conference lectures will take place in the conference hall (the Almond Suite). The poster presentation area is in the same room as the lectures and will be open for the duration of the conference. Authors will be available to answer questions at times specified in the agenda.

Lunch will take place in the Mercure restaurant. The banquet dinner provided Saturday night will be held at the Five Sisters Zoo. Delegates will be transported to the zoo by bus on the 12th for a field halfday practicum followed by a silent auction and dinner before being transported back to the hotel. Check the schedule for times. Buses will not wait for delegates who are running late.

TRANSPORTATION

Zoo Field Day

Delegate transportation is coordinated from the hotel to Five Sisters Zoo on the 12th. Delegates must meet at the hotel lobby entrance at 1:45 PM to board the bus and head to the zoo. The trip will start with a practicum applying welfare assessment techniques learned during conference lectures. After the practicum, delegates will have free time to tour the zoo. There will be a banquet dinner and silent auction, cash bar, and live, local music in the evening at the zoo's cafe (Leaping Lemur Restaurant). After dinner the bus will depart from the zoo at 10:00 PM to head back to the hotel. Silent auction winners should pay for and pick up their items before boarding the bus. A shuttle will be available for a 9:00 PM return for delegates wishing to head back to the hotel early. There is limited seating on the shuttle.

Delegates wishing to use WIFI during their zoo visit can login using the code "howmanymonkeys"

POST CONFERENCE TRIPS

On October 14th, those delegates choosing to continue on to the post conference trip to the Highland Wildlife Park, must meet at the hotel lobby at 7:45 AM. After touring the park, delegates will meet to board the bus at 4:00 PM to return to the hotel around 7:00 PM.

On October 15th, delegates traveling to the Edinburgh zoo, should meet at the hotel lobby at 9:15 AM. Please arrive on time. After a day at the zoo, delegates returning to the hotel should meet at 3:45 PM to return to the hotel around 4:40 PM.

It is the delegates responsibility to be on the bus for the return trip. The bus will not wait.



APP



To help delegates navigate this year's conference, download our conference app at <https://bear-care-group.lineupr.com/abcscotland2019>. The app will include the schedule, abstracts, presenter biographies, sponsors, and connects delegates to the BCG board.

NAME BADGES

All delegates will be provided with a name badge upon registration. Please wear it; it is your pass to all sessions, functions, transportation, and post conference trips. This will also help to introduce you to other delegates.

POSTER PRESENTERS

All poster presenters are asked to bring their posters to the registration area during registration on Wednesday, October 9th where you will be assisted in displaying your poster presentation in the conference room. If you are not available to speak with delegates at the times designated on the agenda please place a notification on your poster as to when you will be available for questions.

POSTER SESSIONS

Posters will be available for viewing in the main conference room throughout the conference. Poster presenters will be available to answer questions during the breaks specified in the agenda and during the scheduled session on the afternoon of the 11th.

SPEAKERS

All speakers should have sent their PowerPoint presentations to Angela Gibson prior to the start of the conference. All presentations must be in PC format. To keep us on schedule and avoid technical mishaps, we will not be able to swap out laptops. It is the delegate's responsibility to ensure that your presentation and all media will play on a PC device. Please check your presentation after registration, before the evening icebreaker, or in the morning prior to the conference starting to be sure everything functions correctly on the conference laptop.

SILENT AUCTION

Please bring your silent auction donations with you to registration. Include your name, item description and the estimated value of the item. The silent auction items will be available for viewing throughout the conference sessions on Thursday and Friday at the hotel.

The auction itself will be held at the Five Sisters Zoo Saturday evening, and all auction items will be available for payment and pick up that evening. Delegates can pay by PayPal, cash, and credit card. There is not an ATM on zoo grounds. All proceeds from the silent auction are used to help fund the Advancing Bear Care conferences and international workshops. Thank you for your donation.

BIAZA CREDIT

WELFARE ASSESSMENT AND PRACTICUM AT FIVE SISTERS ZOO

This year the Advancing Bear Care Conference will incorporate a BIAZA-approved welfare assessment session. In this session we will explore what welfare assessment means, along with reviewing an assessment tool that you can use with the bears at your facility. At the Five Sisters Zoo delegates will be able to practice using this tool to demonstrate bear welfare assessment. Participants will receive a BIAZA certificate, and have the opportunity to participate in a research project at the University of Edinburgh to validate a welfare assessment tool for bears in zoos. This session will allow you to benchmark the welfare of your own bears over time, note any potential concerns, and discuss steps that you could take to improve welfare where problems are detected

HUMAN BEHAVIOR CHANGE FOR ANIMALS



Unless we understand why humans do (and don't do) behaviours that impact animals and apply the science of human behaviour change, we will struggle to be effective at improving the welfare of animals in our care. The session will provide an overview of the emerging interest in human behaviour change in the animal protection sector with interactive elements throughout to allow participants to apply the concepts to their work. The focus will be on how to impart change in your facility after the conference in terms of ensuring intentions become actions and how to address some potential challenges you might face.

BREAKOUT SESSIONS

During the afternoon of the 11th, delegates will have the opportunity to participate in two workshop sessions (Temperate and Tropical bears). The workshops are designed to dive into discussions brought up during lectures, ask questions to help with delegates with the husbandry of their bears, make connections, and problem solve challenges. Delegates should come with questions or topics they would like to ask or share. After 1 hour delegates can choose to rotate to the other session. Sessions will be moderated by the BCG board and guest speakers.

POST CONFERENCE TRIPS

Thanks to our friends at the Royal Zoological Society of Scotland (www.rzss.org.uk), participants to this year's conference will have the opportunity to join post-conference excursions to Edinburgh Zoo and the Highland Wildlife Park.

Established in 1909, the Royal Zoological Society of Scotland (RZSS) is a registered charity which works to promote awareness and conservation of rare and endangered species. RZSS owns and runs Edinburgh Zoo (www.edinburghzoo.org.uk) and Highland Wildlife Park (www.highlandwildlifepark.org.uk).

Edinburgh Zoo was opened in 1913 and is set in 82 acres of sloping parkland, situated three miles from Edinburgh city centre. It is home to around 1,000 rare and endangered animals including Giant pandas and sun bears.

Edinburgh Zoo is one of Europe's leading centres for conservation, education and research, working collectively with many other zoos and conservation agencies around the world as well as in the UK in coordinated conservation programmes, to help ensure the survival of many threatened animal species. The zoo also supports a range of targeted research projects which are designed to enhance animals'

behavioural and physiological needs, as well as running an extensive education programme which aims to raise awareness and understanding of the fragility of life on this planet, and our responsibility to help care for it.

The Zoo is also one of Scotland's most popular visitor attractions, with over 800,000 visitors a year.

The Highland Wildlife Park founded in 1986 is located in the Cairngorms National Park, seven miles south of Aviemore. Discover Scottish wildlife and endangered animals of the world's mountains and tundra in a spectacular setting. The Wildlife Park has a wide and diverse range of animals, from native species such as the capercaillie and Scottish wildcat to those from further afield such as the Amur tiger and polar bear.

The RZSS has one of the UK's most highly qualified in-house veterinary services and is committed to providing training and further education to the next generation of zoo veterinarians. Their veterinary team frequently lectures at UK veterinary schools and speaks at both national and international conferences.

In 2013 the RZSS became the first certified UK training centre for the European College of Zoo Medicine (ECZM) Diploma in Zoo Health Management and is currently one of just four such centres globally.



On October 14th, delegates continuing to the Highland Wildlife Park, must meet in the hotel lobby at 7:45 AM. Delegates are on their own for lunch at the park and can tour the facility at their leisure. A special tour has been arranged for ABC delegates from 11-1 PM with the HWP bear staff and a guided bus tour at 3:00 pm. Delegates returning to the hotel should board the bus at 4:00 PM.

October 15th, delegates choosing to continue to the Edinburgh zoo, should meet at the hotel lobby at 9:15 AM. Delegates will spend the day touring the zoo on their own. A special experience has been arranged with pandas and sun bears. Delegates wishing to participate should meet at the sun bear enclosure at 11:30 AM. Please be on time. There are several dining options throughout the zoo for delegates to choose from for lunch. All delegates returning by bus to the hotel must be on the bus 3:45 PM for the return trip.

It is the delegates' responsibility to be on the bus for the return trip. The bus will not wait.

If you do not wish to eat at the parks and prefer to bring your own food there are grocery stores within walking distance of the Mercure hotel.

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BEARS JUST NEED 'STUFF'

Else Poulsen

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AGENDA

ABC Scotland 2019 October 9th- 15th

| Oct 9th | | | |
|------------------|---|-----------------|----------------------|
| Welcome | | | |
| Time | Activity | Presenter | Location |
| 3:00 - 7:00 | Registration | | Almondsuite entrance |
| 3:00 - 7:00 | Poster set up | | Almondsuite |
| 6:00 - 9:00 | Ice Breaker | | Almondsuite |
| Open 24 hr | Bar | | Mercure lounge |
| Oct 10th | | | |
| Conference Day 1 | | | |
| Time | Activity | Presenter | Location |
| 6:30 - 9:30 | Complimentary breakfast at hotel | | Mercure Restaurant |
| 7:30 - 9:00 | Registration | | Almondsuite entrance |
| 8:00 - 9:45 | Session I: Opening | | |
| 8:00 - 8:30 | Welcome to ABC 2019 "A Bear for all Seasons" | Jay Pratte | Almondsuite |
| | Housekeeping | Angela Gibson | Almondsuite |
| | Keynote Introduction | Heather Bacon | Almondsuite |
| 8:30 - 9:30 | KEYNOTE-URSID EXTREMES: AN HISTORIC OVERVIEW OF POLAR BEAR AND SUN BEAR MANAGEMENT AND HOW WE | Doug Richardson | Almondsuite |

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| | NEED TO ADDRESS THEIR CARE IN A CHANGING CLIMATE | | |
| 9:30 - 9:45 | Q & A | | Almondsuite |
| 9:45 - 12:30 | Session II: Principles | | |
| 9:45 - 10:30 | THE PRINCIPLES OF BEHAVIOUR-BASED BEAR HUSBANDRY | Jay Pratte | Almondsuite |
| 10:30 - 10:45 | Coffee Break & View Silent Auction items | | Mercure Lounge |
| 10:45 - 11:05 | REGIONAL VARIATIONS IN WINTER DORMANCY OF ASIATIC BLACK BEARS: IMPLICATIONS FOR MANAGEMENT OF CAPTIVE BEARS | Nicola Field | Almondsuite |
| 11:05 - 11:25 | A YEAR AS A BEAR: WELFARE MONITORING OF A PAIR OF ZOO-HOUSED BROWN BEARS | Denise Luminelli | Almondsuite |
| 11:25 - 12:15 | THE PRINCIPLES OF BEHAVIOUR-BASED DAILY AND SEASONAL BEAR ENRICHMENT | Mindy Babitz | Almondsuite |
| 12:15 - 12:30 | Q & A | | Almondsuite |
| 12:30 - 1:30 | Lunch View Silent Auction items | | Mercure Restaurant |
| 1:30 - 4:15 | Session III: Welfare Assessment | | |
| 1:30 - 2:30 | Welfare Assessment - Part I Theory | Heather Bacon | Almondsuite |
| 2:30 - 3:00 | ASSESSING QUALITY OF LIFE IN BEARS | Angela Gibson | Almondsuite |
| 3:00 - 3:15 | Coffee break | | Mercure Lounge |

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| | View Silent Auction item | | |
| 3:15 - 4:00 | Welfare Assessment - Part II Recognition of Welfare Indicators | Heather Bacon | Almondsuite |
| 4:00 - 4:15 | Q & A | | Almondsuite |
| 4:15 - 4:30 | Memorial Grant Announcement | Jay Pratte | Almondsuite |
| 4:30 - 4:45 | Wrap up | Angela Gibson | Almondsuite |
| 4:45 | Delegates on their own for dinner | | |
| Oct 11th Conference Day 2 | | | |
| Time | Activity | Presenter | Location |
| 6:30 - 9:30 | Complimentary breakfast at hotel | | Mercure Restaurant |
| 8:00 - 8:15 | Housekeeping | Angela Gibson | Almondsuite |
| 8:15 - Day 3 | Session IV: Seasonality | | |
| 8:15 - 9:00 | XENOGLOSSY? ARE BOTH SIDES REALLY COMMUNICATING WHAT WE THINK THEY ARE... | Jay Pratte | Almondsuite |
| 9:00 - 9:20 | MANAGING SEASONAL BEHAVIOR IN LARGE GROUPS | Sarah Van Herpt | Almondsuite |
| 9:20 - 10:05 | NUTRITION AND SEASONAL DIETS | Heather Bacon | Almondsuite |
| 10:05 - 10:20 | Coffee break View Silent Auction items | | Mercure Lounge |
| 10:20 - 10:40 | A REVIEW OF THE PROGRESSION OF THE BLACK BEAR (URSUS AMERICANUS) DIET AT NORTHWEST TREK WILDLIFE PARK | Angela Gibson | Almondsuite |

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| 10:40 - 11:00 | NUTRIENT COMPOSITION OF DIETS CONSUMED BY WILD EUROPEAN BROWN BEARS (URSUS ARCTOS ARCTOS) | Leen Verbist | Almondsuite |
| 11:00 - 11:20 | A ZOOKEEPER'S APPROACH TO SEASONAL CALORIE SUPPLY IN POLAR BEARS | Amy Goswell | Almondsuite |
| 11:20 - 11:40 | THE SEASONAL DIET AND PROVISION OF ENRICHMENT FOR THE BROWN BEARS AT ZSL WHIPSNADE | Sarah McGregor | Almondsuite |
| 11:40 - 11:55 | Q & A | | Almondsuite |
| 11:55 - 1:00 | Lunch, View Silent Auction items | | Mercure Restaurant |
| 1:00 - 1:40 | THE SEASONALITY OF TROPICAL BEARS | Mindy Babitz and Annemarie Weegenaar | Almondsuite |
| 1:40 - 2:00 | CREATING A SUCCESSFUL EX-SITU BREEDING HABITAT FOR SUN BEARS | Lucy Edwards | Almondsuite |
| 2:00 - 2:20 | LEARNING FROM THE PAST | Sara Colandrea | Almondsuite |
| 2:20 - 2:40 | SUCCESSFUL POLAR BEAR BREEDING AT HIGHLAND WILDLIFE PARK | Una Richardson | Almondsuite |
| | | | |
| 2:40 - 3:00 | BEHAVIOUR-BASED HAND-REARING OF A SLOTH BEAR CUB AT SMITHSONIAN'S NATIONAL ZOO | Mindy Babitz | Almondsuite |
| 3:00 - 3:15 | Q & A | | Almondsuite |

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| 3:15 - 3:30 | Coffee break View Silent Auction item | | Mercure Lounge |
| 3:30 - 4:00 | Poster viewing and Q & A | | Almondsuite |
| 4:00 - 6:00 | Break-out Discussions: Temperate & Tropical Bears | | |
| 4:00 - 5:00 | Session I | | Almondsuite |
| 5:00 - 6:00 | Session II | | Almondsuite |
| 6:00 | Delegates on their own for dinner | | |
| Oct 12th Conference Day 3 | | | |
| Time | Activity | Presenter | Location |
| 7:30 - 9:30 | Complimentary breakfast at hotel | | Mercure Restaurant |
| 8:00 - 8:15 | Housekeeping | Angela Gibson | Almondsuite |
| 8:15 - 9:00 | SEASONAL SHIFTS IN BEAR BEHAVIOR - WHAT IS NORMAL? | Heather Bacon | Almondsuite |
| 9:00 - 9:30 | BEARING UP WITH THE SEASONS: PAIN, OSTEOARTHRITIS AND GERIATRIC BEARS ACROSS THE WORLD | Romain Pizzi | Almondsuite |
| 9:30 - 9:50 | DORMANCY IN ASIATIC BLACK BEARS WITH AN EMPHASIS ON GERIATRIC CARE | Molly Feldman | Almondsuite |
| 9:50 - 10:05 | Q & A | | Almondsuite |
| 10:05 - 10:20 | Coffee break | | Mercure Lounge |

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|---------------|--|---------------------------------|---------------------------------------|
| 10:20 - 10:40 | MANAGING BLACK BEAR (URSUS AMERICANUS) HIBERNATION - A ZOO WIDE EFFORT | Angela Gibson | Almondsuite |
| 10:40 - 11:00 | THE DEVELOPMENT AND BENEFITS OF CAPTIVE TORPOR IN EUROPEAN BROWN BEARS | Jon Forde | Almondsuite |
| 11:00 - 12:00 | HIBERNATION AND HYPERPHAGIA DISCUSSION | Heather Bacon and Angela Gibson | Almondsuite |
| 12:00 - 1:00 | Lunch | | Mercure Restaurant |
| 1:00 - 1:45 | Free time to prep for zoo trip | | |
| 1:45 | Meet to board bus | ALL | Hotel Lobby |
| 2:00 | Board buses | | Hotel Front |
| 2:30 | Group photo | | Five Sisters Zoo |
| 2:50 - 3:20 | Welfare Assessment Part II: Practicum/BTS Session A | Heather Bacon and Angela Gibson | Brown Bear Exhibits |
| 3:20 - 3:50 | Session B | Heather Bacon and Angela Gibson | Brown Bear Exhibits |
| 2:50 - 3:50 | Enrichment | Five Sisters Staff | Lion and Wolf Exhibits |
| Free time | Delegates on their own to tour zoo between sessions and auction | | |
| 6:00 - 7:00 | Silent Auction | | Upstairs of Leaping Lemurs Restaurant |
| 7:00 - 9:30 | Banquet and live music | | Leaping Lemurs Restaurant |
| 9:30 - 10:00 | Pick up auction items and complete payments | | Leaping Lemurs Restaurant |

| 9:00 - 10:00 | Bus back to hotel | | |
|----------------------------------|---|------------------------------------|--------------------|
| Oct 13th Conference Day 4 | | | |
| Time | Activity | Presenter | Location |
| 7:30 - 9:30 | Complimentary breakfast at hotel | | Mercure Restaurant |
| 8:00 - 8:15 | Housekeeping | Angela Gibson | Almondsuite |
| 8:15 - 8:30 | Welfare assessment Part III: Wrap up | Heather Bacon and Angela Gibson | Almondsuite |
| 8:30 - 8:50 | TRAUMA | Heather Bacon | Almondsuite |
| 8:50 - 9:10 | RESCUED BEARS RECOVERING FROM TRAUMA | Annemarie Weegenaar | Almondsuite |
| 9:10 - 9:30 | FORGET ABOUT YOUR WORRIES AND YOUR STRIFE: BUILDING THE CONFIDENCE OF TWO RESCUED BROWN BEARS. | Adam Welsh and Gary Curran | Almondsuite |
| 9:30 - 9:45 | Q & A | | Almondsuite |
| 9:45 - 10:05 | Coffee break | | Mercure Lounge |
| 10:05 - 4:50 | Session V: Implementing change | | |
| 10:05 - 12:05 | HUMAN BEHAVIOUR CHANGE FOR ANIMALS SESSION | Suzanne Rogers | Almondsuite |
| 12:05 - 12:20 | Q & A | | Almondsuite |
| 12:20 - 1:20 | Lunch | | Mercure Restaurant |
| 1:20 - 2:05 | A HOLISTIC APPROACH FOR EXCELLENCE IN CAPTIVE BEAR CARE | Annemarie Weegenaar | Almondsuite |

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|-------------|---|---|----------------|
| 2:05 - 2:50 | BEHAVIOURAL MANAGEMENT & TRAINING | Jay Pratte | Almondsuite |
| 2:50 - 3:05 | Q & A | | Almondsuite |
| 3:05 - 3:20 | Coffee break | | Mercure Lounge |
| 3:20 - 4:05 | CHOICE AND CONTROL – IMPORTANT ELEMENTS IN DAILY AND SEASONAL HUSBANDRY | Mindy Babitz and Heather Bacon | Almondsuite |
| 4:05 - 4:50 | BREAKING DOWN BARRIERS FOR BEARS: AN UNLIKELY COLLABORATION TAKING ON THE WORST ABUSES OF CAPTIVE BEARS | Jay Pratte and Brittany Peet | Almondsuite |
| 4:50- 5:05 | Q & A | | Almondsuite |
| 5:05 - 5:30 | Conference Wrap | BCG | Almondsuite |
| Oct 14th | | ACTIVITY | |
| | Post Conference Trip Highland Wildlife Park | Departure from Mercure - 8:00 AM (approx arrival 11:00 AM), departure from HWP - 4:00 PM (approx arrival 7:00 PM) | |
| Oct 15th | | ACTIVITY | |
| | Post Conference Trip Edinburgh Zoo | Departure from Mercure - 9.30 AM (approx arrival 10:00 AM), departure from Edinburgh Zoo - 4:00 PM (approx arrival 4.30 PM) | |

LECTURE ABSTRACTS (IN ORDER OF PROGRAM)

Ursid Extremes: An Historic Overview Of Polar Bear And Sun Bear Management And How We Need To Address Their Care In A Changing Climate

Doug Richardson

Due to our fascination with them and their physical resilience, bears have been kept in a range of captive environments from tolerable to horrific. It is only in recent years that our understanding of the various species' needs has resulted in a more enlightened approach to their care. The polar bear, *Ursus maritimus*, and the sun bear, *Helarctos malayanus*, represent the size and climatic zone extremes of the bear spectrum. They both have comparably long captive histories, but they also continue to be problematic to breed and present significant husbandry challenges. As we begin to understand them better, both species are seeing their unique habitats shrinking and are coming under increasing pressure that is only likely to become more severe. Climate change is contributing to their increasing rarity and it is likely that managing a significant proportion of each species' global population in varying forms of human care will be required if they are to see out the 21st century. If we are to meet this not inconsiderable challenge, we will need to look at a range of novel solutions that will not only maintain numbers and conserve genetic diversity, but that will also preserve as wide a range of each species unique behavioural repertoire as possible.

The Principles Of Behaviour-based Bear Husbandry

Jason (Jay) Pratte

Wild and captive large bears are born with a genetic complement of characteristics and drives that they need to live successfully in the wild habitat that they have evolved to occupy. They expect that their body and understanding of how to find food, mates, and lodging will work effectively with the environmental opportunities around them. Like their wild counterparts, captive bears want to build nests, advertise for and find mates through complex personal and

environmental messaging, raise and teach young, test and identify food sources, navigate through complex terrain, set up daily and seasonal routines that their internal and external environmental circumstances dictate, and solve problems and make daily decisions. Mimicking animals' natural habitat and giving them the natural ingredients to express their normal daily and seasonal activity patterns reduce the stressors inherent in captivity and promotes mental and physical wellbeing. Behaviour-based husbandry is the deliberate provision of species-specific, internal and external care to animals befitting their genetic and circumstantial expectations. It is focused on the animals' agenda and includes enclosure design and furniture, ambient parameters (ex. photoperiod, temperature, sound), diet presentation and nutrition, daily and seasonal environmental complexity (ex. environmental enrichment programming), care and maintenance routines, communication (ex. operant conditioning), caregiver and animal relationship building, and veterinary care. The importance of recognizing and adapting to each species of bears' seasonal variation and needs is a critical component of behaviour-based husbandry.

Regional Variations In Winter Dormancy Of Asiatic Black Bears: Implications For the Management Of Captive Bears

Nicola Field

Asiatic Black Bears (*Ursus thibetanus*) range over a wide area of Asia, occurring along the mountains from Afghanistan, through Pakistan, Bangladesh, Bhutan, Cambodia, China, India, Iran, Korea, Democratic People's Republic of Korea, Lao People's Democratic Republic, Myanmar, Nepal, Thailand, and Viet Nam. They are also found in south eastern Russia, and on Taiwan and the Japanese islands of Honshu and Shikoku (IUCN, 2018). Whilst there are some limitations to the research into Asiatic Black bear ranges, habitat and dormancy behavioural patterns, there have been documented regional variations in behavioural patterns. In summer, they have been reported at altitudes over 3,000 metres, descending to lower elevations during the winter. There is some evidence of undergoing winter dormancy and denning behaviour in northern parts of ranges, whilst suggestion that in the southern,

hotter parts of their range, they do not undergo winter sleep. There has also been some documented variation on the timing of denning and how they den across their range. This presentation will consider documented evidence of dormancy behaviour of wild Asiatic black bears alongside the experience and knowledge of winter dormancy behaviour of captive Asiatic black bears in the same region. Comparison will be made of activity and appetite in captive populations, comparing this within the region and against wild populations. It will further consider how understanding regional variations can impact and influence the management of captive bears. It is believed that there will be differences in management strategies dependent on the region.

[A Year As A Bear: Welfare Monitoring Of A Pair Of Zoo-Housed Brown Bears](#)

Francesca Bandoli, Denise Luminelli, Jessica Menti, Giovanna Marliani, Daniela Pessani, Pier Attilio Accorsi, and Paolo Cavicchio

Animal welfare encompasses the physical and psychological health, the emotional state and the behaviour of animals. Since welfare needs vary over time and for individuals within the same group, long-term data collection are recommended to assess the well-being of zoo-housed species. This study aimed to monitor the welfare of a pair of adult European brown bears (*Ursus arctos*) across seasons through the analysis of ethological and physiological parameters. The bears were transferred to Pistoia Zoo (Italy) from Targoviste Zoo (Romania) in 2010 thanks to the cooperation with the International Bear Foundation. Their behaviours were video-recorded over an 8-month period, from December 2016 to November 2017. Ten 1-hour observation sessions per day per individual were conducted and an average of 309 hours of video-recordings per subject were obtained. Video analysis was carried out with BORIS (Behavioral Observation Research Interactive Software) and data were analysed with non-parametric and randomization tests. Moreover, 167 fresh faecal samples were collected to measure the concentration of faecal cortisol using the Radio Immuno Assay Technique based on-binding of 3H-steroid by competitive adsorption. The diurnal and nocturnal activity budgets of the bears were monitored

across all seasons and were found to be similar to those reported in studies on wild conspecifics and in accordance with the species' seasonal rhythmical variation. Bears mainly performed species-specific behaviours and both showed higher percentage of stereotypic pacing in spring. Findings also indicated that the female's pacing could be related to feeding times according to previous studies. Results have been used to modify the bears' daily husbandry routine and enrichment programme. For a more comprehensive welfare assessment, they will be integrated with the analysis of faecal cortisol concentration. Finally, a new data collection is currently underway to verify if the applied changes are effective in promoting species-specific behaviours and in reducing stereotypic pacing.

The Principles Of Behaviour-based Daily And Seasonal Bear Enrichment

Mindy Babitz

Enrichment is an important part of any good husbandry program. Good husbandry promotes good welfare for animals in human care and involves opportunities for animals to express species-specific behaviours. Enrichment programming is a husbandry tool for providing these species-specific opportunities in zoos, sanctuaries, and even rehabilitation settings. This presentation will discuss the basics of behaviour-based bear enrichment programming, with an emphasis on using natural history to meet species-specific needs; i.e. providing goal-based enrichment that is meaningful to a bear. Examples of enrichment programming that fit into a bear's daily husbandry routine, as well as habitat design, will be discussed. Modifications to enrichment programming that meet the seasonal needs of bears will also be highlighted.

Welfare Assessment Part I: Theory

Heather Bacon

Animal welfare is increasingly important to the global zoo community – both in terms of public perception and in terms of supporting effective in-situ and ex-situ conservation initiatives. It is well-

recognised that how an animal feels is a key part of animal welfare (Broom, 2011, Mellor et al., 2015) , but evaluating this can be challenging, especially in bears which typically mask many signs of poor welfare. This presentation will give an overview of animal welfare (how the animal copes, and how it feels) and ethics (the moral and value-judgements that we make) and discuss some of the challenges and opportunities to optimize animal welfare in bear husbandry and management. We will explore an evidence-basis for assessing welfare in bears and outline a new pilot tool aimed at assessing and improving bear welfare in practice. During the conference we'll be recruiting participants to help us gather data in your own bears over the upcoming months.

Assessing Quality Of Life In Bears

Angela Gibson

There are a variety of analyses available for animal care professionals to use to monitor quality of life in animals. Unfortunately, behavioural responses to pain and quality of life indicators are not well established in bears. When there is a slow decline in health, assessing the quality of life can be challenging for animal care staff. Focusing on certain bear behaviors and individual changes, care staff can distinguish subtle health changes and pain in individuals through quantitative data. This can help provide early diagnosis for treatment, as well as dictate husbandry and management modifications necessary to accommodate individual needs.

Welfare Assessment Part II: Recognition Of Welfare Indicators

Heather Bacon

This presentation will introduce a draft bear welfare assessment tool. The tool has been reviewed by the BIAZA Scientific committee and the BIAZA education committee. This session will explore how each indicator on the tool should be assessed and scored using video and photographic examples. This session will prepare you for trialling

the tool during the welfare assessment session at the Five Sisters Zoo. Based on these sessions and your feedback, the tool will be revised and volunteers will be recruited to collect data in their own zoological collections. This data will allow us to validate and optimise this tool, hopefully resulting in a robust and valid bear welfare assessment tool. This is your opportunity to be part of an active research project to directly assess and enhance bear welfare!

[Xenoglossy? Are Both Sides Really Communicating What We Think They Are...](#)

Jay Pratte

When humans interact with bears, whether we are field biologists, care givers, or rehabilitators, we are ALWAYS teaching the animals something. Concurrently, the animals are communicating through behaviour, so we should also always be learning. Problems arise when what humans *think* is being communicated, to and from the animals, conflicts with actual behavioural responses. Differences in perception of the environment between humans and bears will be discussed, along with how intentional messaging (such as operant conditioning) can go unexpectedly awry. Years of training experience, research and a solid grounding in behaviour-based husbandry will contribute to helping people recognize what the animals may be inadvertently learning from us (and acting on!), in order to improve our two-way bear communication and comprehension skills. The importance of listening to the animals while managing daily and seasonal routines will be discussed.

[Managing Seasonal Behaviour In Large Groups](#)

Sarah Van Herpt and Heidi Quine

At the Vietnam Bear Rescue Centre (VBRC) we currently house 185 bears ranging in group sizes of one to twenty-two. 173 of these bears are Asiatic black bears (*Ursus thibetanus*), who are known to show seasonal behaviours such as dormancy. It is imperative we keep large groups to ensure the best use of our finite space; however, it is still important for us to manage the individual needs of the bears. As such,

we implement seasonal feeding strategies and assess food amounts and types weekly based on bear behaviour. Bear appetites are assessed using behavioural indicators; eating speed, vocalizations, anticipatory behaviours, food guarding and aggression over food have proven to be reliable gauges of hunger or satiety. Although portion sizes are largely managed at group level, the needs of individual bears must always be taken into consideration. The ability to give individual measured portions enables us to react to both group and individual behavioural needs. Respecting and responding to the seasonal feeding ecology of bears is an essential management strategy in the bears' physical and psychological rehabilitation. As such, it is often difficult to assess behaviour of newly rescued bears as seasonal behaviour or something underlying during their first year after rescue. Managing bears according to their seasonal needs contributes to social harmony within groups by reducing competition and aggression over resources, frees bears to follow their hardwired instincts, and allows the sanctuary to house large numbers of individuals together.

Nutrition And Seasonal Diets

Heather Bacon

In the wild, all eight bear species consume seasonally varied diets, however within the zoological setting, optimising diets to reflect these seasonal changes can be challenging. This presentation will outline general principles of tropical and temperate bear nutrition, focussing on how we might apply ecological data in the zoological setting, the consequences of diet on behaviour and physiology and some of the common challenges that keepers may face when optimising diets for bears under their care.

A Review Of The Progression Of The Black Bear (*Ursus Americanus*) Diet At Northwest Trek Wildlife Park

Angela Gibson

At Northwest Trek Wildlife Park, animal care staff proposed to redesign their black bear diet to enhance the nutritional and behavioral needs of the bears. The new diet would create enriching feeding opportunities based on seasonal variation, encourage active foraging and food manipulation, and meet seasonal metabolic requirements from hyperphagia to hibernation. In order to mimic the wild black bear diet, an annual diet cycle with monthly seasonal changes was created. To further incorporate flexibility in mimicking the natural opportunistic foraging behavior of black bears, animal care staff arranged the diet with weekly variations, a change from the typical daily allotment diet. This change in diet presentation increased the range of behaviors observed and provided a more dynamic activity budget, while staying within the nutritional needs of the bears.

Nutrient Composition Of Diets Consumed By Wild European Brown Bears (*Ursus Arctos Arctos*)

Leen Verbist, Guido Bosch, Annelies De Cuyper, and Sarah Depauw

The Bear Forest, a bear sanctuary initiated by Bears in Mind in Ouwehand Zoo Rhenen (The Netherlands), has developed its own Natural Feeding Program (NFP) to simulate seasonal fluctuations in energy and nutrient intake, to reflect the wild diet of brown bears. However, data on the nutrient composition of the natural diet of European brown bears are scarce. To support optimization of the NFP, we evaluated the literature describing the feeding ecology of European brown bears and estimated the nutritional profile of their wild diet. Dietary compositions were derived from ecological studies based on the fecal volume of food consumed. The nutrient composition of the dietary items was extracted from the literature and/or food composition databases and combined with the dietary composition to calculate the energy and macronutrient composition of the wild diet in accordance with each

season and climate zone. The seasonal variation in the macronutrient profile is very divergent according to the climate zone where European brown bears live. Bears in humid continental climates characterized by cold winters consume a lot of animal matter all year. This is reflected in a high protein (dry matter basis) content of approximately 50%-60% of the diet during spring and early summer whereas diets in temperate climates, characterized by hot summers and mild winters, mainly contain green vegetation and soft mast resulting in a dietary protein content of about 15%. While dietary energy content in these temperate climates consequently increases from spring towards autumn, the exact opposite is observed in the humid continental climates because bears occupying these climate zones have little to no access to high-lipid foods such as hard mast during the hyperphagic stage and they compensate this by eating more soft mast. Currently, several nutritional guidelines for brown bears in captivity advise a gradual change from green vegetation and occasional meat in spring to more nutritious items such as fruits during summer and an increase in nuts and fatty meat towards autumn. Our study showed that bears have the flexibility to thrive under different climatic conditions with varying nutrient intakes and results can be used to further develop NFP and feeding recommendations.

[A Zookeeper's Approach To Seasonal Calorie Supply In Polar Bears](#)

Amy Goswell and Jaap Wensvoort

Polar bears naturally exist in a highly variable environment with a varying and typical seasonal calorie supply.[1] The Toronto Zoo has a five-year study underway to monitor seasonal changes in polar bears with respect to their nutrition, metabolism and behaviour. By simulating a seasonal calorie supply to polar bears under human care combined with regular, voluntary blood sampling, we hope to better understand polar bear physiology and we hope to increase the overall welfare of this species under human care. By putting the bears into a catabolic state during the summer months their body mass and body condition will decrease, and also possibly their rates of metabolism

and core body temperature, allowing them to cope through behaviour adaptation with the warmer ambient temperatures. The bears are fed a high caloric diet from the beginning of February until July and a low caloric diet from July into February. The straight-line body length of the bears has been measured and they are weighed once a week to allow calculation of their body condition, expressed as a percent of body fat. Voluntary blood samples are collected bi-weekly, core temperature loggers (iButtons) are fed 1-2 times per month, and behaviour is monitored systematically (ethograms) when possible. So far, the core body temperature data suggests that the polar bears at the Toronto Zoo are capable of staying cool in the summer heat with no evidence of heat stress as indicated by their behaviour. Supplying calories more comparable to that of wild bears may help them adapt better to their naturally changing environment. With continuing research, we are trying to find out whether polar bears are capable of decreasing their metabolic rate as a measure of energy conservation while in a catabolic state, and whether certain blood hematology and biochemical parameters differ with a seasonal feed supply.

[The Seasonal Diet And Provision Of Enrichment For The Brown Bears At ZSL Whipsnade](#)

Sarah McGregor

The Zoological Society of London (ZSL) Whipsnade Zoo has been looking after European Brown bears (*Ursus arctos arctos*) since 1932. In 2016 the management and husbandry care of the brown bears changed at the zoo and in October 2017 three juvenile brown bears arrived from Kolmården Wildlife Park in Sweden. They have a varied diet that changes with every season. The bears are routinely weighed every month and each season we change the amount of food provided as well as the food items offered. We have no set feeding times for our bears; we provide them with numerous feeds a day at different times along with new and interesting enrichment given daily. We believe that not having set routine feeding times has had a positive impact on the behaviour of our bears as they do not exhibit any anticipatory behaviours prior to feeding which were behaviours regularly witnessed with the previous elderly bears.

The Seasonality Of Tropical Bears

Mindy Babitz and Annemarie Weegenaar

Despite living in climates that experience more modest seasonal changes than temperate bears, tropical bears are still physiologically affected by those changes as reflected by the increases and decreases in their appetites, activity levels, and even coat thickness over the course of the year. Unfortunately, these seasonal changes are often overlooked in captive settings and husbandry routines have not typically been adjusted for these seasonal differences. This presentation will discuss seasonal changes experienced by two of the tropical bear species, sloth bears (*Melursus ursinus*) and sun bears (*Helarctos malayanus*), with examples of how their husbandry routines can be modified to adjust with the seasons in a captive setting.

Creating A Successful Ex-Situ Breeding Habitat For Sun Bears

Lucy Edwards

Having received a pair of rescued sun bears (*Helarctos malayanus*) in 2015, we had the luxury of managing and observing them for two years before we were to design and build a brand-new exhibit. The new habitats would be focused on breeding seasonality as well being able to separate or mix the pair of bears to promote breeding success. With this in mind we created separate, inter-linking habitats for both the male and female bears along with facilities to birth and rear cubs. This resulted in the more natural mixing of the bears triggered by their behaviour and the first ever successful rearing of a sun bear cub in the UK in 2017.

Learning From The Past

Sara Colandrea, Natalia Prado, and Craig Saffoe

Breeding management of Andean bears (*Tremarctos ornatus*), in the North American zoo population has been difficult over the past 15 years. Since 2005 there have only been four females in the population to reproduce, and three of them are directly related (mother and two

daughters). Historically, we have tended to manage our captive Andean bear collection based on what we know of the ecology of their wild counterparts in South America and on anecdotal assumptions passed down over generations. We have made assumptions about their seasonality (that they only breed in the spring), that there is high cub mortality in the species, and the ages at which they become reproductively viable and post reproductive. Due to the poor reproductive rate in the N. American population, I began collecting my own data (from the National Zoo (NZP) collection and a few other AZA zoos) and examining other resources to see if the assumptions guiding our management were accurate. This presentation will share some key husbandry data that has proven useful to improving the management of Andean bears at NZP, as well as discuss remaining gaps in the current knowledge.

Successful Polar Bear Breeding At Highland Wildlife Park

Una Richardson and Victoria Larkin

The Royal Zoological Society of Scotland (RZSS) Highland Wildlife Park first exhibited polar bears (*Ursus maritimus*) in 2009 with the arrival of an elderly female ‘Mercedes’ who had previously been housed in Edinburgh Zoo for over 20 years. We used entirely new methods of containment ensuring that she had a large and complex environment in which to live. Once she had passed away, we began to explore the possibility of breeding this complex species. We housed two young male bears, ‘Arktos’ and ‘Walker’, together in a 2-hectare complex, and in due course brought in a female, ‘Victoria’, from Aalborg Zoo. She was housed in a brand-new facility over 0.6 km from the male bears. When it was coming up to the 2016 breeding season, ‘Arktos’ was moved to an area alongside ‘Victoria’ and in due course they were introduced and mated. Although she went through the motions of putting on weight and later taking to the cubbing den with a marked appetite decrease, the first year of matings did not produce a cub. We went through the same procedure the following year but made some important changes. As a result of these changes, ‘Victoria’ gave birth to a healthy male cub

on December 18th, 2017, the first polar bear cub born in the U.K. in 25 years.

Behaviour-based Hand Rearing Of A Sloth Bear Cub At Smithsonian's National Zoo

Mindy Babitz, Stacey Tabellario, and Tony Barthel

When faced with the unexpected task of raising a sloth bear cub (*Melursus ursinus*) after her mother could not care for her, Smithsonian's National Zoo staff reached out to bear behavior experts to assist them in putting together a behaviour-based hand rearing plan. This plan was tailored to the genetic, natural history, individual history, current circumstantial and unique needs of this sloth bear cub. Having concerns about the impact of hand rearing on both physiological and psychological development, the team attempted to mimic essential aspects of bear rearing that would naturally occur when being raised by a mother bear in order to ensure the cub would have the best chance of a normal, healthy future in the zoo setting. A holistic approach was taken to meet the rearing requirement of a highly intelligent species with complex social, cognitive and emotional needs. This presentation will give an overview of the process and the tools used to mimic natural bear rearing within the constraints of a zoo environment.

Seasonal Shifts In Bear Behaviour – What Is Normal?

Heather Bacon

Bear activity varies with life stage, access to environmental resources and husbandry routines, health status and season. And so with so many variables to consider, how can we as bear caregivers evaluate what is normal and what is not? Whilst each bear is an individual and will have individual preferences relating to activities and feeding, there are some common 'warning signs' that all bears may show when their health is declining. This presentation will outline the benefits and limitations of behaviour as a monitoring tool, discuss common symptoms that may warrant further investigation, and

suggest strategies for improving bear health and welfare through regular monitoring and record keeping.

Bearing Up With The Seasons: Pain, Osteoarthritis And Geriatric Bears Across The World

Romain Pizzi

Bears are extremely diverse with species spread across the globe, occurring in desert, rainforest and arctic habitats. While some are terrestrial, others like sun bears (*Helarctos malayanus*) are largely arboreal, and polar bears (*Ursus maritimus*) have a heavily aquatic component to their lifestyle. Evolving in these different habitats has placed different requirements on the different species' bodies. In captivity bears can be extremely long-lived. Like most geriatric animals with a heavy body weight, bears suffer from osteoarthritis and other painful degenerative conditions as they age. Regarded as stoic, this may be more a factor of us frequently failing to recognise their signs of pain and discomfort. Being plantigrade, their movement is not as familiar to us as digitigrade pet dogs and cats. The different bear species may also manifest different problems due to their differing lifestyles. Understanding the different types of conditions, recognising problems, and finding treatments and management practices that ensure a high level of welfare in geriatric captive bears is not just a problem for veterinarians, but needs a whole team approach from those caring for these amazing animals.

Dormancy In Asiatic Black Bears With An Emphasis On Geriatric Care

Molly Feldman

The China Bear Rescue Centre (CBRC) currently houses 64 bears. Of these, 62 are Asiatic black bears (*Ursus thibetanus*) that live in groups ranging from one to eleven individuals. The dormant season at CBRC runs from approximately November to April. During this time, behavioural changes occur across the sanctuary such as decreased activity levels and appetites, increased nest-building, and failure to go outside in the morning or recall into the dens in the evening. There is a great deal of individual variation in terms of the degree

and timing of dormancy-related behaviours and thus a continual balance between maintaining welfare at the group and individual levels. Particularly sleepy bears have a tendency to disrupt the daily husbandry routine and as a result, may be kept inside in an environment that supports their dormant state until they're ready to rejoin the main group. As the population ages, most bears are being treated for cardiac disease and/or poor mobility as a result of spinal issues and arthritis. Deterioration of these conditions mimics many of the behaviours seen in dormant bears, making it increasingly difficult to differentiate between seasonal changes and those that have serious implications for quality of life. Furthermore, dormancy-related behaviours such as poor medicinal compliance can contribute to increased levels of pain, advanced hypertension, and other states of compromised health and welfare. In recent years, a variety of environmental and husbandry changes have been implemented to accommodate the needs of an aging population during the dormant season. We also rely on detailed behavioural and veterinary records in an attempt to guide both management and quality of life discussions. With increasing experience in the care of geriatric bears, it is hopeful that this knowledge will be beneficial to the welfare of captive bears in advanced stages of life.

Managing Black Bear (*Ursus Americanus*) Hibernation - A Zoo Wide Effort

Angela Gibson

Captive management of temperate bears should provide a variety of environmental and behavioural opportunities that allow the bears to make choices about their own lives. This includes accommodating bears that demonstrate a desire to become winter dormant (hibernate). Managing these extreme seasonal needs while within the constraints of the zoo environment can present challenges. This presentation will demonstrate how animal care staff can implement seasonal husbandry and agenda changes to accommodate denning needs, and educational platforms that can provide for the needs of the bears as well as for the guests at the zoo.

The Development And Benefits Of Captive Torpor In European Brown Bears

Jon Forde

Two male European brown bears (*Ursus arctos*) were rescued from a canned hunting facility in Bulgaria in November 2014 and moved to a purpose built, woodland facility in Wildwood, Kent. The bears had been kept in Bulgaria to be hunted, existing in a sparse environment where they did not thrive. Neither bear had the ability to express natural behaviours and their lives were devoid of enrichment, as shown by the health issues they exhibited when first arriving at Wildwood. Dietary changes were implemented and the bears were given the freedom to roam an acre of woodland while their health was constantly assessed. The environmental and dietary changes, as well as encouraging these bears to enter and complete torpor resulted in positive changes to their health. Having completed their third torpor, we have observed progressive improvements to the bears behaviour and health, with reduced stereotyping and going from various consistent illnesses over the initial period at Wildwood without torpor, to virtually no health issues since beginning torpor. This presentation will review how we resolved various issues exhibited by these rescued bears through changes in habitat, diet, enrichment and seasonal management.

Rescued Bears Recovering From Trauma

Annemarie Weegenaar

Orphaned cubs, injured wild bears, farmed and / or inappropriately housed captive bears all endure stress, resulting in significant psychological trauma. When these bears are rescued and placed in rescue centres, sanctuaries or zoos, a recovery plan is required. Every bear needs an individual approach to ensure their recovery with some bears needing more time than others. A health inspection after arrival should rule out medical issues, as these may be well hidden as an evolutionary strategy to survive. A positive caregiver-bear relationship will help a bear feel calm and safe, adding to a positive experience. This relationship can enhance their recovery along with the successful integration with other bears. A nutritionally balanced,

seasonal diet will improve health and stimulate their natural feeding behaviour. Access to outdoor enclosures should be approached carefully for bears who have never experienced the outdoors. Gradual addition of enrichment will assist the bears in their recovery process, with the aim of having the bears show a diverse behavioural repertoire, including hibernation for species who do so in the wild.

[Forget About Your Worries And Your Strife: Building The Confidence Of Two Rescued Brown Bears](#)

Adam Welsh, Gary Curran, Emma Howe, Kayleigh Maclean, and Shirley Curran

In 2018 Five Sisters Zoo in Scotland provided a permanent home to two sibling European brown bears (*Ursus arctos arctos*). The two individuals, named Henk and Eso, were rescued by the organisation Four Paws from squalid cramped conditions in an Albanian roadside restaurant. The bear sanctuary at Five Sisters Zoo which was originally opened in 2012 at a cost of around £80,000 is comprised of two acres of mixed woodland, three indoor dens and a small fenced holding paddock. When Henk and Eso arrived, the sanctuary was already home to two elderly female brown bears (Carmen and Suzy). While Henk and Eso could see these two individuals the two pairs were not mixed. Initially keeping staff and zoo management had planned for Henk and Eso to get full access to the large woodland area. This area would have provided ample opportunity for foraging and exploring in the summer months and provided the opportunity for both bears to enter torpor in separate large concrete tunnels in the winter months. Upon their arrival, however, it appeared that this space triggered a lot of unexpected stereotypical behaviour. Bears in captivity can often be prone to exhibiting abnormal behaviours but in this case, it was not a lack of enrichment or cramped conditions that appeared to be the causal factor. In fact, it appeared Henk and Eso were nervous about the large amounts of space they now had access to. In response to this, new temporary fencing was installed allowing staff to expose both individuals to the large open space gradually. This was carried out across approximately 12 months (May 2018 to April 2019) at the end of which both Henk and Eso were finally given access to the full two acres of woodland. We aim to present the work of our keepers over the

past year in ensuring that Henk and Eso feel confident enough to use this large woodland enclosure in order to lead an enriched life all year round in their new Scottish home.

A Holistic Approach For Excellence In Captive Bear Care

Annemarie Weegenaar

Excellence in captive bear care is only achieved when an integrated approach is taken and the bears are holistically managed. Animal care staff, the veterinary team and supervisors should all work together to ensure bears experience good welfare. In many facilities around the world skilled staff provide excellent care to the bears under their care. But in many other facilities, animal care staff may have little or no previous experience caring for captive wild animals. Not knowing how a bear lives in the wild, not being aware of seasonal fluctuations and not fully understanding bear behaviour can quickly lead to a gap between what a bear wants and needs, and what a bear receives in captivity. Providing relevant resources and opportunities for training will help animal care staff gain a greater understanding of the animals they work with. Animal care staff should be empowered and enthusiastic about their daily routine, and appropriate rewards will increase motivation. Senior management needs to be engaged as well to ensure the best care for the bears is being provided. Barriers for change need to be identified and a welfare assessment model could be used to prioritize areas for improvements. Research of good practices, backed up with scientific evidence and education of senior management may result in improved practices. Providing excellent care for bears to ensure optimum welfare would benefit facilities; visitors prefer visiting an attraction which does not have a negative impact on animal welfare. Facilities who provide excellent animal care may therefore see an increase in income, an increased trust with donors and improved success with grant applications. Frequent meetings, evaluations and reviews are all necessary to ensure processes are constantly reviewed so excellent bear care is maintained.

Behavioural Management & Training

Jason Pratte

Operant conditioning is one tool in our behaviour-based husbandry repertoire that enables us to better communicate with and manage the animals in our care. Training is how we as caregivers are able to better teach the animals what is expected of them in an environment where they historically do not have as much control over their lives as they would in their natural environment. Training an animal the basic concept that they will be rewarded for specific actions allows us to encourage them to train and exhibit a wide range of behaviours that make captive management much easier. The basics of operant conditioning are outlined, along with the general framework of establishing a training program. The importance of understanding natural history of the species is vital, along with an individual animal's history and personality traits. Several examples of useful behaviours are illustrated to demonstrate just a few trained responses that can improve our daily care routines. The importance of training will be discussed, including relationship building, stress reduction, as well as improved communication and understanding. Focus will also be paid to addressing seasonal behaviour changes and expectations in our bears.

Choice And Control – Important Elements In Daily And Seasonal Husbandry

Mindy Babitz and Heather Bacon

The importance of choice and control in promoting good welfare for captive animals is well documented in the scientific literature. Wild animals make numerous choices every day, and many of these choices are involved in essential daily and seasonal life processes such as food, mate and nesting site selections. In captivity, however, most choices are made for animals by their human caretakers and this lack of control over their environment and essential life processes can lead to frustration. By increasing the amount of choice and control captive animals have, we can improve their welfare, reduce behavioural and psychological issues, and enhance mental stimulation. This

presentation will outline examples of the application of choice in behavioural husbandry and explore common misconceptions about offering choices to our bears. We will consider several areas where offering choices may be difficult (such as healthcare, training, and breeding management), challenging traditional practice and showcasing examples of progressive husbandry centred on providing bears with the opportunities to make their own choices within the captive environment.

Breaking Down Barriers For Bears: An Unlikely Collaboration Taking On The Worst Abuses Of Captive Bears

Jay Pratte and Brittany Peet

This presentation will discuss the unlikely collaboration between an AZA-affiliated behavior and welfare expert, Jay Pratte, and PETA attorney, Brittany Peet, and how Pratte and Peet are working together to end the worst abuses of captive bears, and rescue individual bears from inadequate conditions. The presentation will provide an overview of the most serious welfare issues for captive bears in the U.S., including confining bears in concrete pits, forcing bears to perform in traveling shows, bear cub encounters, and unaccredited exhibitors confining bears in cramped, barren cages where the animals are unable to engage in species-typical behaviors and experience appropriate seasonal metabolic changes. The presentation will also highlight some of the successes of this collaboration including numerous bears rescued from abuse, a new multi-disciplinary group of bear professionals focusing on public advocacy for bears, and the adoption of a modern master plan at a small, city-owned zoo in New Mexico following meetings with Peet and Pratte.

POSTER ABSTRACTS (ALPHABETIZED BY LAST NAME)

Feasting & Fasting In The Bear Forest – A Natural Feeding Program For Captive Brown Bears

Koen Cuyten

Up until 1999 the brown bears (*Ursus arctos*) in the Bear Forest in the Netherlands were fed a standard diet of dry dog pellets, vegetables, fruit, bread, the occasional fish, some meat and nuts. There was little variation in body weight during fall and spring; some of the bears showed moderate increase in weight during the summer. During winter the bears regularly left their artificial dens. Some bears frequently displayed stereotypic behaviour. In 2000 the Natural Feeding Program (NFP) was introduced, designed by Bears in Mind. The NFP diet aims to include food items reflecting dietary items consumed by brown bears in the wild (for example an item such as endive is fed to simulate broad leaved herbs). Hence, the NFP varies seasonally in dietary items and energy content, attempting to replicate the seasonal variation of brown bear diets in the wild. Due to this seasonal variation in the amount of energy and the type of food items, the animals' body weight increases and decreases according to the season. After the start of the new diet in the year 2000, hibernation of the bears in the Bear Forest became more solid, and stereotypic behaviour decreased. According to Valdes (2013) it is advisable to look at the diet of wild bears, more specifically to the food items and their chemical composition when compiling a diet for brown bears in captivity. Malnutrition, a condition that arises due to an incorrect balance of nutrients, under- or overnutrition, can affect behaviour, health, maintenance, growth, reproduction, lactation and many other physiological processes (Bertoni, Trevisi, Houdijk, Calamari, & Athanasiadou, 2016). The NFP was last evaluated in 2012 and several new studies on diet composition of wild European brown bears have been published since then. A literature study on this topic was conducted by BSc Leen Verbist in 2018, which helped Bears in Mind to further

optimize and enhance the NFP and thus the welfare of the bears in the Bear Forest.

Prioritizing Seasonal and Psychological Welfare within the Constraints of a Zookeeper's Day

Erin Melory and Brittany Combs

It can be difficult to balance the direct needs of the animals in our care, the regulatory checklists, and the varying facility management requirements within the limitations of a zookeeper's work day. Bears in particular have such extreme seasonal, psychological and physiological demands that staff can struggle to prioritize their limited time to the highest value for these species. At the Oakland Zoo, in California, zookeepers promote psychological well-being over traditional 'check-list' husbandry tasks. When faced with time constraints, zookeepers concentrate on the activities that will have the greatest direct benefit on the well-being of the animal, such as enrichment and training, and therefore ensure that an appropriate portion of their time goes into those activities. Zookeepers and managers develop and maintain psychological (ie. training, enrichment) and husbandry (ie. cleaning) matrices to help guide the daily keeper routine. These matrices are reviewed seasonally to ensure a balance in the routine care of animal areas and the psychological well-being of each individual. Available staff resources are directed to maximize daily behavioral goals for each individual. This allows zookeepers the flexibility of meeting different levels of husbandry while still maintaining the highest in psychological welfare for the animals.

Seasonal Enrichment Experiences: Creating Predictable Enrichment Events Based On Environmental Cues

Lindsey Shafer

A common practice for bears under human care is often based on providing "things" as daily enrichment to help elicit natural behavior. In an effort to improve upon our current enrichment practices, the bear team at the San Diego Zoo formed a group called "Embrace the Bear". Our group name is based on us "embracing" the

seasonal changes our bears already go through and how we can enhance these changes with expanding our enrichment program. We have started to create enrichment “experiences” that flow throughout the seasons based on the feeding strategies and enrichment we already provide daily. For example, one experience we created was a large fruiting event for our Andean Bears (*Tremarctos ornatus*). Three days before the “event” we ran fans 24/7 and had a sweet blueberry scent in the exhibit. At the end of the three days we added a large amount of old browse bones and skewered a large amount of fruit all over the exhibit. We are working towards implementing various environmental cues that occur before each experience, such as turning on fans that create wind or having a certain smell in the exhibit, with the goal that once these experiences are repeated the bears will start predicating these events. Just as nature provides bears with environmental precursors, such as temperature or weather changes, as to what’s coming next we are working towards providing our bears with a similar experience.

Training Asiatic Black Bears (Former Bile Bears) To Voluntarily Participate In Hand Injection

Thuong Ta, Emily Lloyd, Szilvia Kalogeropoulou, And My La

Training animals to participate in hand injection makes anesthesia induction for veterinary procedures a much calmer and less stressful experience for those animals, and also strengthens the bond between them and their caretakers. All 18 adult Asiatic black bears (*Ursus thibetanus*) residing in BEAR SANCTUARY Ninh Binh were rescued from substandard conditions and had been mistreated for bile extraction. They suffer from many health problems due to their previous environments such as chronic liver and gall-bladder inflammation and dental disease, and some require several anaesthesias to rectify these issues. Many show extreme fear and aggression when a blowpipe is used for darting, likely due to having been previously immobilized on a regular basis for painful bile extraction. It was decided to train the bears for voluntary hand injection to improve welfare in this situation by reducing the negativity of the experience. The animal training plan was approved by the animal manager and veterinarian, and

a shaping plan was developed, with notes made about each training session and regular feedback from colleagues. Currently seven of the eighteen long-term resident adult bears have been successfully trained for this. Those bears anaesthetised via hand injection show a reduced induction time and no behavioural indicators of stress, falling asleep calmly, often in the same spot they were hand injected. The poster details step by step how the hand injection procedure was trained. With this positive result, more bears will be trained for this and other medical procedures, and more keepers will be trained to train animals in the future.

BIOGRAPHIES (ALPHABETIZED BY LAST NAME)

SARA COLANDREA has been a keeper at the Smithsonian National Zoological Park for the past nine years and has been the primary keeper for the Andean Bears for the past four years. She has traveled to Peru and helped to lead a multi-national conference where she taught about husbandry techniques. She is also undertaking three research projects involving Andean Bear stress hormones, determining estrus, and embryonic diapause.

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KOEN CUYTEN's interest and passion for the natural world and the living creatures in it was triggered at an early age. During his study of Animal Management, Koen had the opportunity to study the bears in the Bear Forest at Ouwehand Zoo up close and personal. After his bachelor degree study he joined the foundation in 2005 and has been working as Project Coordinator ever since. Koen's work at Bears in Mind is highly inspiring and motivating, but also challenging, as the need to help captive bears in distress and protect wild bears in their

natural environment is ever present. Koen wants to contribute his part and leave this world a wilder place for his children, where bears and people can live in harmony. Koen also works for the Rewilding Foundation, on international conservation projects aimed at promoting the vision of rewilding where large carnivores such as leopards and wolves play a vital role as a keystone species.

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LUCY EDWARDS has been a zookeeper in the UK for 15 years specialising in large carnivores. Since 2011, her focus has been on the management of tropical bear species including Andean bears and sun bears at Chester Zoo in the UK. The highlight of Lucy's career has been the successful breeding of both of these species which are housed in two of the most highly regarded exhibits in Europe.

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NICOLA (NIC) FIELD is the Co-Founder of Global Animal Welfare. She is also co-chair of the IUCN Captive Bear Expert Team. Nic has more than 20 years' experience working with bears. She is the former Bear & Vet Team Director at Animals Asia's China Bear Rescue Centre, where she worked for 12 years with Asiatic black bears, Eurasian brown bears and Tibetan brown bears. Nic spent eight years working with captive North American black bears in the UK and has experience working with Malayan Sun bears. Nic has an MSc in Wildlife Biology & Conservation, as well as Animal Management qualifications. She spent two years in education in the UK working as an animal-care assessor. She has also spent time

working in Uganda and Vietnam as a researcher on conservation projects and also at the Colobus Trust in Kenya.

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MOLLY FELDMAN has worked as a Bear Manager for Animals Asia since July 2016 and is responsible for the care of 182 bears across two sites in China. She has an MSc in Applied Animal Behaviour and Animal Welfare and a professional background in animal husbandry, rehabilitation and behavioural research.

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JON FORDE is a senior keeper looking after European brown bears and various hoof stock at Wildwood in Kent. He spent three years studying animal care and management, and has worked at three different zoos with a variety of different animals. Since starting at Wildwood Jon has become heavily focused on the advancement of bear husbandry and has attended two bear husbandry workshops.

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AMY GOSWELL grew up in Southern Ontario, Canada. After graduating with an honours Bachelor of Science majoring in zoology from the University of Guelph and a diploma in Animal care from Sheridan College she was hired in 2010 as a wildlife care keeper at the Toronto Zoo. Amy worked in several areas of the zoo but in 2014 started working in the Tundra

area that included polar bears. She is currently the grade 4 (lead hand) of the Canadian Domain/Tundra where she works closely with Canadian species such as polar bears and grizzly bears. Working primarily with polar bears, Amy has trained individuals for medical behaviours such as voluntary blood draws, voluntary injections, and body exams that are very important for the animal's overall health and wellbeing. Amy is also a huge advocate for conservation by educating guests about climate change and promoting green initiatives.

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DENISE LUMINELLI is an animal keeper and trainer at Società Zoologica di Pistoia Srl in Italy. She earned a Bachelor's degree in Biology in 2014 and a Masters degree in Animal Behaviour in 2017 from Florence University in Italy. Denise also completed a six-month traineeship in animal care and integrated conservation at Pistoia Zoo in 2017. She is currently involved in scientific research in the field of captive animal welfare and training.

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SARAH MCGREGOR is a Senior Keeper on the Asia section at the Zoological Society of London Whipsnade Zoo. Prior to working at Whipsnade, she worked at Woburn Safari Park for ten and a half years and completed the Advanced National Certificate in the Management of Zoo Animals. She works with a vast range of different species including the European brown bears and Sri Lankan sloth bear. She has had numerous highlights throughout her career including presenting at

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ERIN MELROY is the Senior Supervising Primary Keeper for North American black and brown bears at the Oakland Zoo, where she has worked since 2018. In her thirteen years as a zookeeper, she has worked with an array of species including ursids, felids, canids, mustelids, primates, hoofstock, reptiles, and birds. She is focusing on balancing facility needs with the seasonal needs of the bears in her care.

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BRITTANY PEET is the Director of Captive Animal Law Enforcement for the PETA Foundation. Peet, an attorney, works on behalf of animals who are held captive in roadside zoos, traveling shows, and the film and television industries. She also coordinates wild and exotic animal rescues for PETA, and has overseen the rescue of more than 400 chinchillas, 72 bears, 39 tigers, ten chimpanzees, and two baboons.

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ROMAIN PIZZI was born, grew up, and qualified as a vet in South Africa, where there are sadly no native bear species. He is a Royal College of Veterinary Surgeons and European recognised specialist in Zoo & Wildlife Medicine, and has worked with giant pandas, polar bears, sloth bears, brown bears, sun bears and moon bears in numerous zoos and sanctuaries in Europe and Asia. He lives in Roslin when not travelling, with his wife and two small children.

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DOUGLAS RICHARDSON has been working in zoos and on various conservation projects around the world for over 40 years. Currently he consults on a range of international programmes from the European Zoo Association's polar bear breeding programme to leopard reintroduction projects in the Russian Far East and Saudi Arabia. For 10 years up until November 2018, he managed the animal department at the Royal Zoological Society of Scotland's Highland Wildlife Park, which specialises in cold weather adapted species. At the park he created a new husbandry dynamic for polar bears which is now being copied in a range of institutions internationally. As a key member of the European Zoo Association's polar bear species committee and one of the programme's husbandry advisors, he is concerned with not only how best to keep this complex species, but also looking at the long term linkages between the zoo and the field conservation communities and how we can appropriately manage the captive population so that it is in a position to help the species in the wild in the future. He has designed enclosures for and managed all eight species of bear in a range of zoological collections and rescue centres.

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UNA RICHARDSON is the Animal Team Leader at RZSS (Royal Zoological Society of Scotland) Highland Wildlife Park. She began her zoological career in 1991, and has worked in London Zoo, Rome Zoo, Singapore Zoo and a private animal facility in Canada. In addition, she has done voluntary work for a wildlife rescue facility in the Philippines, and recently took a year sabbatical leave to work as a technical advisor for Free the Bears in Laos. The highlight of her career was overseeing the first successful breeding of a polar bear cub in the U.K. in over 25 years.

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SUZANNE ROGERS has worked in several very different roles that together have paved the way for being the co-director of Human Behaviour Change for Animals (HBCA). In 2007, following an early career in scientific publishing and then in various animal welfare organisations, she became the Programmes Manager of the Companion Animal Unit at WSPA (now World Animal Protection). Suzanne managed several programmes, developing and testing participatory methodologies – working with communities to change the way they manage and care for animals. To reflect the broad applicability of the approach she became the Technical Advisor for Human Behaviour Change Programmes. Since 2011, Suzanne has worked as an international consultant for animal welfare and human behaviour change. In 2016, she co-founded Human Behaviour Change for Animals CIC. HBCA recognises that insight about how and why people behave the way they do can provide solutions to challenging issues that affect animals. We combine animal sector expertise with behaviour change theory and practice to offer a unique specialism in animal health, welfare, protection and conservation.

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LINDSEY SHAFER graduated from Michigan State University with a BS in Zoology in 2011. Soon after graduation she began her career at the Birmingham Zoo in Alabama. While there Lindsey worked with her first bears, two little orphan black bear cubs. The challenge of caring for bears was unlike any other animal she had cared for. After completing her time in Birmingham and moving to San Diego at the end of 2015, she became the relief keeper on the bear string. Lindsey currently cares for Andean, grizzly, and sun bears.

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THUONG TA spent a year working as a carnivore and pangolin conservation officer and a year as a turtle conservation officer. She has been working at FOUR PAWS Viet since 2017. As Assistant Animal Manager, Thuong's job includes overseeing the keepers during their basic daily routine, implementing the strategic plan for enrichment in the sanctuary, monitoring the health of the bears and looking for potential problems, working with the vet team and animal manager on treatment plans, observing bear behavior, training bears, and joining rescues. A highlight when training with the bears: she succeeded in training a bear for hand injection for vaccination within a month, and four further bears for anesthesia with weeks.

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ADAM WELSH holds an honours degree in Animal Biology from the University of Stirling and an MRes in Biological Sciences from the University of Chester. Before taking on the Head of Education role at Five Sisters Zoo Adam was a field site manager for the Max Planck Institute's PANAF research site in Ghana where he collected data on chimpanzee presence and abundance. He has worked at Five Sisters Zoo as a keeper and an education officer, and he has been Head of Education since October 2018. In recent years he has also been involved in several publications along with researchers from universities and NGOs including The Max Planck Institute, The University of Chester and West African Primate Conservation Action.

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SARAH VAN HERPT has an MSc in Conservation Biology and is a qualified vet nurse. She spent seven and a half years working as a zookeeper in New Zealand before moving to Vietnam at the start of 2017. Sarah currently works for Animals Asia as the senior bear manager, looking after some of the 185 bears onsite. She is passionate about animal behaviour and enjoys developing training and enrichment programmes to assist in the rehabilitation of bears.

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LEEN VERBIST works as a research assistant and internship supervisor at Odisee University College. She has a Bachelor's degree in Agro- and Biotechnology and is currently completing a Masters of Science programme in International Animal Welfare, Ethics, and Law at the University of Edinburgh. She specializes in animal welfare & behavior, and the welfare of captive wild animals.

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BEAR CARE GROUP BOARD

JASON (JAY) PRATTE, MA, Behavioral Husbandry and Welfare Manager at Omaha's Henry Doorly Zoo & Aquarium and the Lee G. Simmons Conservation Park & Wildlife Safari. Jay is internationally known for his animal behavior and welfare work. He has been an animal caregiver for over two decades, and during his tenure has worked with a variety of animals, including all eight extant bear species. Behavioral husbandry training of carnivores is Jay's specialty, focusing on complex medical goals and training animal keepers around the world in operant conditioning techniques to improve animal husbandry. His work has been showcased on Animal Planet's "Growing Up Panda". Jay has trained animals for the film industry, and has worked with animals in settings from game farms to AZA accredited zoos, with species ranging from ant colonies to giant pandas. Jay is a founding board member and currently president of the Bear Care Group. His Master's degree is in Zoo and Aquarium Management, he has authored numerous publications related to the field, and is a co-editor for the American Association of Zoo Keeper's "Training Tales" column in the Animal Keeper's Forum. Jay is also an adjunct professor at the University of Nebraska at Omaha, teaching Animal Behavior classes and labs, and his own special

topics class on Human – Animal Interactions. He regularly acts as a behavior and welfare consultant for several groups dedicated to improving the husbandry and welfare of animals, and has been instrumental in addressing the welfare of bears in traveling circuses and substandard roadside facilities.

For details of projects and publications:

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MINDY BABITZ, PhD, Senior Animal Keeper at the Smithsonian National Zoological Park. Mindy has been an animal caregiver for two decades, working with a variety of animals including four species of bears. Her specialty is captive husbandry and welfare for sloth bears. Mindy is part of the National Zoo's carnivore hand-rearing team and has experience raising a sloth bear cub. She is the National Zoo's Institutional Representative to the American Association of Zoos and Aquariums' (AZA) Bear Taxon Advisory Group and the Sloth Bear Species Survival Plan. Mindy has a PhD in Psychology with a focus on animal behavior and cognition. She currently conducts research on stereotypical behavior in sloth bears and is primarily interested in improving husbandry and management of sloth bears in zoos. Mindy is on the board of directors of the Bear Care Group and is currently serving as the Vice President and Treasurer.

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ANNEMARIE WEEGENAAR lived in Asia for 17 years where she mostly worked with Asiatic black bears and Malayan sun bears. In Indonesia she set up husbandry routines for sun bears at a newly established education centre. For 10 years she worked with Animals Asia who works on ending

the bear bile trade. First as a Bear Manager at their Chengdu Bear Rescue Centre where she managed a bear team who provided care for Asiatic black bears and brown bears. Then in Vietnam where she established Animals Asia's new rescue centre as their Bear & Vet Team Director. At the sanctuary she headed up a bear & vet team of 50 staff, ensuring the best care was provided for 150 traumatised bears rescued from bile farms and the wildlife trade. She hand reared orphaned cubs, established their diets and trained staff on their proper care. She was also involved in behavioural husbandry training of the bears. In 2016 Annemarie moved back to the Netherlands where she became the Director of Bears in Mind, a Dutch NGO who initiated the Bear Forest in the Netherlands, a sanctuary for abused European brown bears. Annemarie holds a Bachelor degree in Animal Management and is currently studying for a master's degree in International Animal Welfare, Ethics and Law. She is also establishing an NGO's to improve the welfare of wild animals in rescue centres. Annemarie is on the board of directors of the Bear Care Group and was involved in organising the Advancing Bear Care Workshops in Vietnam and India.

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HEATHER BACON, BSc (Hons), BVSc, CertZooMed MRCVS, Veterinary Welfare Education and Outreach Manager at the University of Edinburgh's Jeanne Marchig International Centre for Animal Welfare Education. Heather lectures on captive wildlife welfare issues, and works with zoo associations and NGOs around the world. She has also worked with the European Commission to develop continuing education on captive wildlife welfare in Europe, contributed to the Good practice guide for implementation of the European Union Zoos Directive, and the Association of British Travel Agents guidelines for the use of wildlife in responsible tourism. She is a member of the British Veterinary Association's Ethics and Welfare committee, the Zoological Society of London's Animal Welfare committee, the British and Irish Association of Zoos and Aquaria Ethics committee, and the European

Association of Zoos and Aquaria Animal Welfare Working group. Heather provides consultancy services to zoos and NGO's on bear husbandry and animal welfare issues. She is on the board of directors of the Bear Care Group, has co-authored several papers on animal welfare and bear veterinary care, and previously worked as the Veterinary Director at the Animals Asia Foundation, an NGO working to end the trade in bear bile across Asia. In addition to her veterinary degree, she holds a BSc (Hons) in Conservation Medicine and a Royal College of Veterinary Surgeon's Advanced Practitioner in Zoological Medicine.

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ANGELIKA LANGEN is the co-founder of the Northern Lights Wildlife Society in Smithers, BC, Canada. She worked in German zoos prior to immigrating to Canada, and now has 26 years of experience rehabbing bears in British Columbia. The mental development of bears is a huge focal point of her work. Angelika is a strong believer of sharing ideas and experiences with others and has presented at meetings such as the International Bear Rehab Conference in Russia (2007), the International Moose Conference in Canada (2007), the National Wildlife Rehabilitator Symposium in Albany, NY (2011), the Advancing Bear Care conference in Alberta (2011), the 12th Western Black Bear Workshop in Alberta (2015), and the Advancing Bear Care conference in Vietnam (2015).

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ANGELA GIBSON is the California Trail Zoological Manager for the Oakland Zoo. She has a background in animal behavior, completing a Master's degree from Missouri State University in Biology. Angela is passionate about improving the captive welfare of bears, focusing primarily on the behavioral husbandry needs of North American species as well as developing assessment techniques specific to ursids to monitor their health and well-being. Working with brown bears and black bears she has trained individuals for complex medical behaviors to improve their veterinary care. Since 2018, Angela has been a steering committee member of the Association of Zoos and Aquariums' bear taxon advisory group. She has been volunteering with the Bear Care Group since 2013, joining the board of directors in 2016.

For details of projects and publications:

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FIVE SISTERS ZOO

BRIAN AND SHIRLEY CURRAN established a Garden Centre in 1993. Brian's background was horticulture and Shirley's was office and retail based, but both always had a passion for animals and wildlife. The garden centre soon became a rescue centre for unwanted, abandoned or neglected animals. The facility became licenced as Five Sisters Zoo in 2005 and since then they, along with their sons Graeme and Gary, have dedicated their lives to providing a safe home for all of the 175 different species in their care. A personal goal for them was to one

day help the plight of captive bears. Their dream came true on March 29th, 2012 when they gave three rescued ex-circus bears a permanent home at the zoo, and in May 2018 they offered a home to another two rescued brown bears from Albania. Amongst many of the rescued animals at the zoo are also four ex-circus lions, two Arctic wolves and two snow leopards.

For details of projects and publications:

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GARY CURRAN has been the head carnivore keeper at Five Sisters Zoo for the past three years. Prior to this he was a general keeper and he started his work with European brown bears in 2012. In 2018 he attended the Bear Husbandry Workshop in Chester Zoo and he has been part of international trips to help organise carnivore transfers and to learn more about brown bears in their natural habitats.

For details of projects and publications:

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EILEEN BOYLE has been a specialist Foster Carer for the last 19 years. She is a keen supporter of many animal charities. She is also a keen photographer and visited Five Sisters Zoo on many occasions with her foster children using the stories of the rescued animals as a parallel to her foster children's own lives. She became more involved with the zoo and has been a valued volunteer ever since 2007, dedicating most of her free time to helping out with the rescued bears.

For details of projects and publications:

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| Forde | Jon | jonforde@wildwoodtrust.org | Wildwood |
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| Jacobs | Sally | sallyjacobs96@hotmail.co.uk | Volunteer Wildlife Rehabber |
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| Leaver | Tracy | wildlife@eclipse.net | Woodlands Wildlife Refuge |
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| Luminelli | Denise | luminellidenise@gmail.com | Giardino Zoologico di Pistoia |
| Lunsford | Gary | gary.lunsford@milwaukeecountywi.gov | Milwaukee County Zoo |
| Mather | Katie | stephanie.fender@leisureandculturedundee.com | Leisure and Culture Dundee |
| Mayerhofer | Martina | m.mayerhofer@zoovienna.at | Vienna Zoo |
| McCarlie-Davis | Philip | stephanie.fender@leisureandculturedundee.com | Leisure and Culture Dundee |
| McElroy | Clare | tsdc.keepers@gmail.com | The Scottish Deer Centre |
| McGregor | Sarah | sarah.mcgregor@zsl.org | ZSL Whipsnade Zoo |

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|---------------|---------------|--------------------------------|---|
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| Melroy | Erin | emelroy@oaklandzoo.org | Oakland Zoo |
| Merrick-White | Steve | steve.merrick-white@zsl.org | ZSL Whipsnade Zoo |
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| Peet | Brittany | brittanyp@petaf.org | PETA Foundation |
| Petró | Zsuzsa | education@sostozoo.hu | Sóstó Zoo / Nyíregyháza |
| Pizzi | Romain | romainpizzi@yahoo.com | Wildlife Surgery International |
| Pratte | Jay | jayp@omahazoo.com | Omaha's Henry Doorly Zoo & Aquarium / Bear Care Group |
| Pritchard | Georgia | georgia.pritchard@durrell.org | Jersey Zoo |
| Richardson | Douglas | douglas_richardson@hotmail.com | Zoological Consultant |
| Richardson | Una | urichardson@rzss.org.uk | RZSS Highland Wildlife Park |
| Rogers | Suzanne | info@hbcforanimals.com | Human Behavior Change for Animals |
| Schreiner | Eliane | eli-schreiner@web.de | Volunteer Wildlife Rehabber |
| Schrudde | Daniela | ds@welttierschutz.org | Welttierschutzgesell schaft (WTG) |
| Sergiel | Agnieszka | sergiel@iop.krakow.pl | Institute of Nature Conservation of Polish Academy of Sciences |
| Shadix | Katrina | bearwarriorsunited@gmail.com | Bear Warriors United |
| Shafer | Lindsey | lshafer@sandiegozoo.org | San Diego Zoo |
| Skovlund | Cecilie Ravn | ces@zoo.dk | Copenhagen Zoo/University of Copenhagen |
| Stagni | Elena Maria | elena.stagni@vier-pfoten.org | Vier Pfoten (Four Paws) International |
| Stahl | Kristina | kjmadstahl@gmail.com | Bear Sanctuary Prishtina |
| Sutcliffe | Lisa | bear@bearcave.plus.com | University of Edinburgh |

| | | | |
|-----------|-----------|---------------------------------|--|
| Sutton | Ben | ben.sutton@state.mn.us | Minnesota Zoo |
| Ta | Thuong | thuong.ta@four-paws.org | Four Paws Viet |
| Terrazas | Katherine | robinsonkatie41@yahoo.com | Lee G. Simmons Conservation Park and Wildlife Safari |
| Van Herpt | Sarah | sherpt@animalsasia.org | Animal Asia |
| Verbist | Leen | leen.verbist.uoe.od@gmail.com | Odisee University College |
| Vuille | Olivier | olivier.vuille@gmail.com | Zoo Le Bois due Petit Chateau |
| Weegenaar | Annemarie | aweegenaar@gmail.com | Global Animal Welfare / Bear Care Group |
| Welsh | Adam | adam@fivesisterszoo.co.uk | Five Sisters Zoo |
| Winton | Lesley | lesley@wintonbearfoundation.org | The Winton Foundation for the Welfare of Bears |
| Wirdnam | Paul | headkeeper@wildwoodtrust.org | Wildwood |
| Zwicker | Rebecca | rzwicker@cmzoo.org | Cheyenne Mountain Zoo |

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The Winton Foundation
for the Welfare of Bears

Making it bearable

www.wintonbearfoundation.org

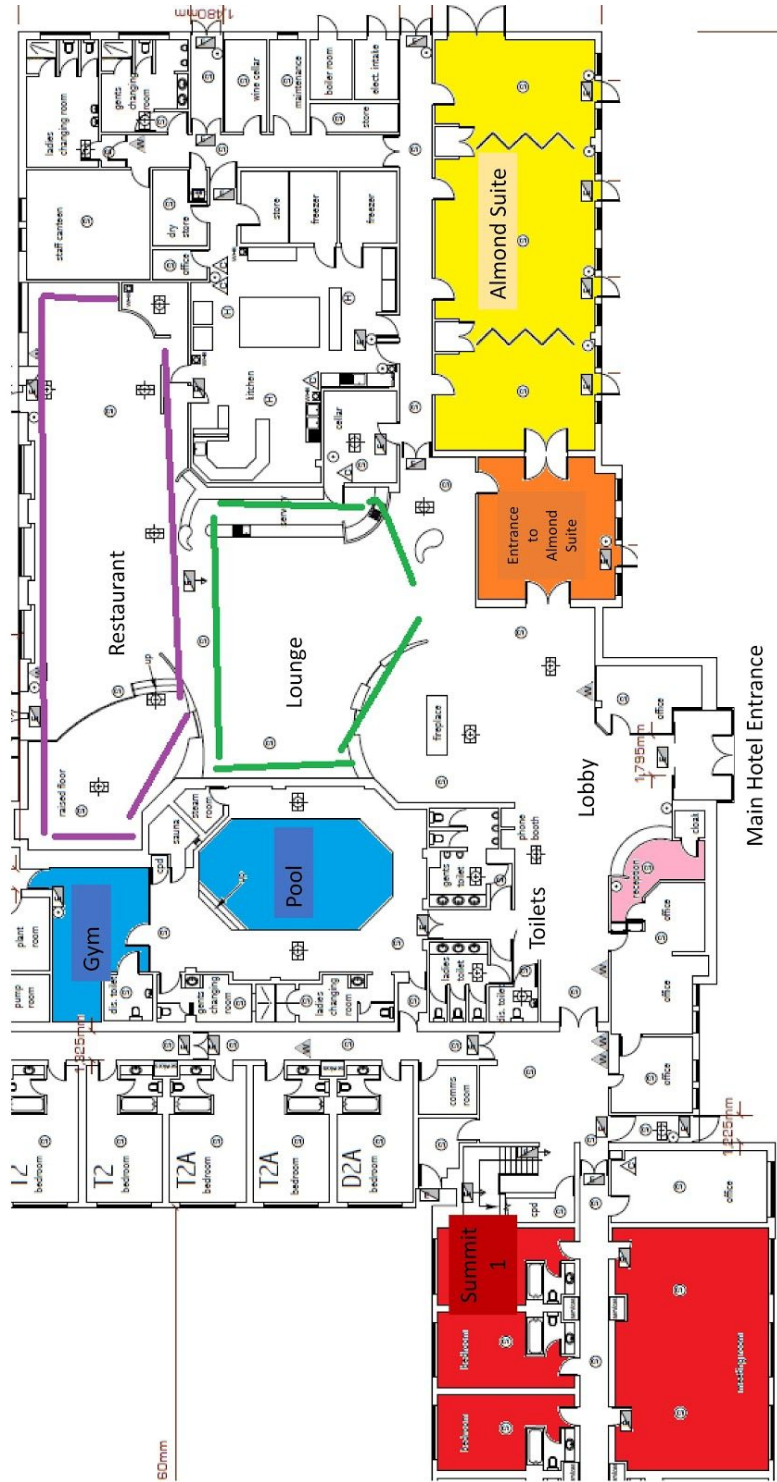




GLENMORANGIE
SINGLE MALT SCOTCH WHISKY




HOTEL MAP



Mercure
HOTELS

Mercure Livingston Hotel
Almondview, Livingston,
West Lothian, EH54 6QB
Tel: 0844 815 9102
www.mercurelivingston.co.uk



By Road

From the M8

- Leave the M8 at the junction 3 (signed Livingston & A899).
- Join the A899 (Livingston Road) towards Livingston.
- Leave the A899 at the Centre Interchange.
- Follow the slip road around to a roundabout and turn left onto Almondvale Drive.
- Turn left again onto Almondview.
- The hotel is situated at the end of the road.

From the A8/Edinburgh

- Take the A8 out of the city to the Newbridge roundabout.
- Take the M8 towards Glasgow for 7 miles, leaving at junction 3. Follow directions above "From the M8".

Car Parking

- Free guest parking.

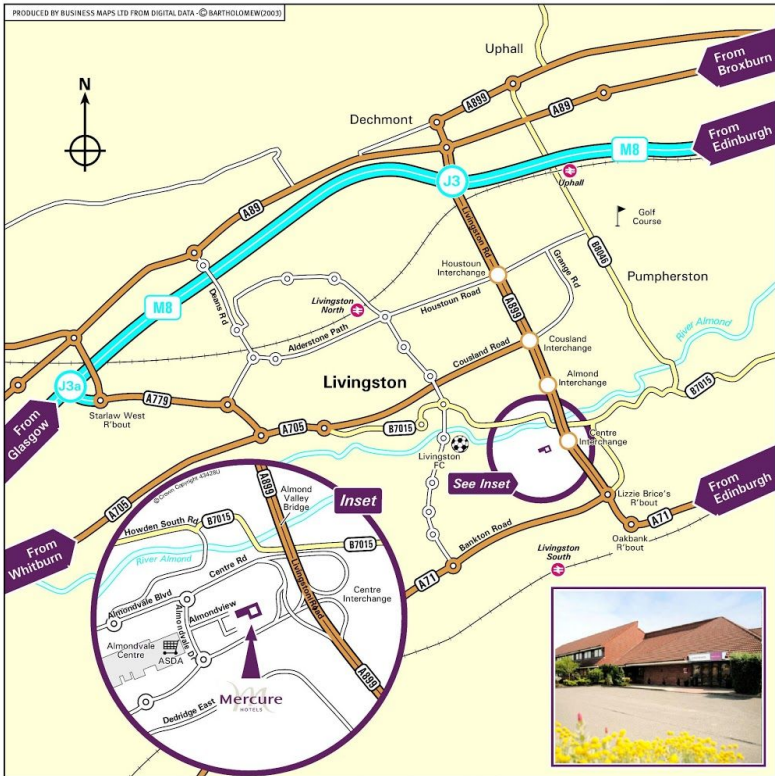
By Train

- Livingston South station is 2 miles and Livingston North station is 2.5 miles from our hotel.
- Uphall Station is 4 miles from our hotel.

By Air

- The nearest airport is Edinburgh, which is 12 miles from our hotel.


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Livingston

Inset

See Inset



FIVE SISTERS ZOO MAP

Opening Times

February to March: 10am - 5pm
 April to September: 10am - 6pm
 October: 10am - 5pm
 November to January: 10am - 4pm

Keeper Talks & Feeds

- 12.00pm Animal Encounter**
 (£3p/p, Discovery & Learning Centre, 20 spaces)
- 1.00pm Lemur Feed** (£6p/p, 5 spaces)
- 1.15pm Meerkat Talk**
- 1.45pm Lynx Talk**
- 2.00pm Animal Encounter**
 (£3p/p, Discovery & Learning Centre, 20 spaces)
- 2.00pm Lemur Feed** (£6p/p, 5 spaces)
- 2.30pm Snow Leopard Talk**
- 2.45pm Lost Kingdom Talk**
- 3.00pm Lemur Feed** (£6p/p, 5 spaces)
- 3.30pm Arctic Wolves Talk**
- 4.00pm Animal Encounter**
 (£3p/p, Discovery & Learning Centre, 20 spaces)
- 4.30pm Lion and Bear Rescue Talk**

Please Note!
 There are limited spaces for chargeable sessions. These are stated above. Enclosure, feeds & talks may be subject to change at short notice.

